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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Don J. Nguyen

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EXAMINER

SHERMAN, STEPHEN G

ART UNIT

PAPER NUMBER

2629

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/750,140	NGUYEN ET AL.	
	Examiner	Art Unit	
	Stephen G. Sherman	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-20 and 22-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4, 5, 18 and 19 is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 8-17, 20 and 22-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8 May 2007 has been entered. Claims 1-6, 8-20 and 22-27 are pending. Claims 7 and 21 have been cancelled.

Response to Arguments

2. Applicant's arguments, see page 11, line 13 to page 15, line 7, filed 8 May 2007, with respect to claims 1-3, 6, 8-17, 20 and 22-27 have been fully considered and are persuasive. The 35 USC §112, 1st paragraph rejection of claims 1-3, 6, 8-17, 20 and 22-27 has been withdrawn.

3. Applicant's arguments filed with respect to the rejection of claims 1-3, 6, 8-17, 20, and 21-27 under 35 USC §103 have been fully considered but they are not persuasive.

The applicant's argument regarding the 35 USC §103 rejection begins on page 16 of the response. The applicant states that their invention selects between the two modes of operation based on the level of brightness setting for the display, while the inventions of Lin and Esteves select the mode of operation based upon a feedback signal from the backlight, and thus the combination of Lin and Esteves does not teach the claimed invention. The examiner respectfully disagrees.

The fact that Lin and Esteves use a feedback signal is of no consequence to the claimed invention. The applicant's claims never state that the display is not using a feedback signal, and therefore the feedback signal does not nullify the fact that Lin and Esteves teach the claimed invention. As explained in the rejection, since the applicant states that the display's brightness is directly related to the amount of light provided by the backlight and that someone skilled in the art knows that "brightness level" and "brightness setting" are referring to the same thing even when used in conjunction with display or backlight (See the last paragraph of page 12 of the response), that since Lin is receiving a voltage value driving the backlight, where the voltage value indicates the brightness level of the backlight, that Lin would also be receiving a level of brightness setting for the display since these two terms, according to the applicant, mean the same thing. Thus the examiner is basing this rejection off of the applicant's response that "brightness level of the backlight" means that same thing as "level of brightness setting for the display". If the combination of Lin and Esteves teach of changing the mode of operation based on the "brightness level of the backlight" then according to the

applicant, Lin and Esteves also teach of changing the mode of operation based on the "level of brightness setting for the display".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1-2, 6, 9-11, 13-14, 22-24, and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US 6,936,975) in view of Esteves et al. (US 6,724, 174).

Regarding claims 1, 8, and 22, Lin et al. disclose a method, apparatus and system comprising:

- a display (Figure 4);
- a cold cathode florescent lamp (CCFL) in the display (see Fig. 3A);
- an inverter component for a backlight or CCFL (Fig. 4 shows a standard voltage inverter circuit),
- a controller for the inverter component (Fig. 4, the inverter controller),

receiving a level of brightness setting for the display (see col. 4, lines 57-60, where there is voltage and current feedback to indicate the existing load which is also a brightness level of the backlight. The examiner understands that based on the argument made by the applicant in the last paragraph of page 12 of the response filed May 8, 2007, which states that the display's brightness is directly related to the amount of light provided by the backlight and that someone skilled in the art knows that "brightness level" and "brightness setting" are referring to the same thing even when used in conjunction with display or backlight, that since Lin is receiving a voltage value driving the backlight, where the voltage value indicates the brightness level of the backlight, that Lin would also be receiving a level of brightness setting for the display since these two terms, according to the applicant, mean the same thing.),

said display having a backlight driven by a voltage inverter (Fig. 5), and Lin further teaches operating in either a burst mode or continuous mode (see col. 4, lines 43-46).

Lin et al. fail to explicitly teach selecting either a continuous mode of operation for the voltage inverter or a burst mode of operation for the voltage inverter based on the level of brightness setting for the display.

Esteves et al. disclose a power supply regulator that selects either a continuous mode of operation for the voltage inverter or a burst mode of operation for the voltage inverter based on the level of brightness setting for the display (see col. 5, lines 4-29, where the load level, i.e. voltage/current is used to switch between a continuous or burst mode, and see col. 3, lines 29-30, where this method may be utilized in any regulator

that uses burst mode operation. As explained above, the examiner is basing this rejection off of the applicant's response that "brightness level of the backlight" means that same thing as "level of brightness setting for the display". This means that receiving a voltage value driving the backlight, where the voltage value indicates the brightness level of the backlight, would also be receiving a level of brightness setting for the display since these two terms, according to the applicant, mean the same thing.).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Esteves et al. in the circuit of Lin et al. in order to provide higher efficiency and reduce transistor gate charge losses at light lamp loads.

Regarding claim 2, Lin et al. and Esteves et al. disclose the method of claim 1.

Esteves et al. also disclose the method wherein selecting either the continuous mode of operation or the burst mode of operation comprises:

comparing the level of brightness setting for the display to a threshold brightness setting (see col. 6, lines 50-64, where the mode voltage, which corresponds to the existing load level, is compared to the threshold voltage V_{th});

if the level of brightness setting for the display is above the threshold brightness setting, selecting the continuous mode of operation (see col. 6, lines 45-59, where a high level is indicated if the voltage is above the threshold, where the high level corresponds to continuous mode); and

if the level of brightness setting for the display is below the threshold brightness setting, selecting the burst mode of operation (see col. 6, lines 60-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the threshold of Esteves et al. in the invention taught by the combination of Lin et al. and Esteves et al. in order to have an automatic method of switching between a continuous mode and a burst mode.

Regarding claim 6, Lin et al. and Esteves et al. disclose the method of claim 1.

Lin et al. also disclose a method comprising:

adjusting the level of brightness setting for the display based on at least one of a user input and an operating system control (see col. 4, lines 62-64, where the inverter controller inherently corresponds to operating system control).

Regarding claims 9 and 23, Lin et al. and Esteves et al. disclose the apparatus of claim 8 and the system of claim 22.

Lin et al. also disclose an apparatus and system wherein the inverter component comprises:

a first switch (Fig. 4, switch 34A) coupled between a first node and a second node (Fig. 4), said first node to couple to a voltage source (Fig. 4, the node above 34A is connected to a high voltage source H.V.);

a second switch (Fig. 4, switch 36A) coupled between the second node and a third node (Fig. 4), said third node to couple to a ground (Fig. 4);

a third switch (Fig. 4, switch 34B) coupled between the first node and a fourth node (Fig. 4);

a fourth switch (Fig. 4, switch 36B) coupled between the third node and the fourth node (Fig. 4);

a first capacitive element coupled between the second node and a fifth node (Fig. 4, the capacitor is between node A, which is the second node and the right side of the primary of the transformer, which is the fifth node);

a transformer having a first coil coupled between the fourth node and the fifth node (Fig. 4 shows that the first coil is coupled between the fourth node shown as node B and the fifth node which is the node on the other side between the coil and the capacitor.), and

a second coil to couple a sixth node to a first terminal of the backlight (Fig. 4, the secondary side of the transformer couples a sixth node to a first terminal of the backlight); and

a second capacitive element to couple the sixth node to a second terminal of the backlight (Fig. 4, the capacitor beside the LCD panel couples the sixth node from the secondary side of the transformer to a second terminal of the backlight).

Regarding claim 10, Lin et al. and Esteves et al. disclose the apparatus of claim 9.

Lin et al. also disclose an apparatus wherein the first, second, third, and fourth switches comprise field effect transistors (FETs) (Fig. 4, switches 34A, 36A, 34B, and 36B are shown as transistors).

Regarding claims 11 and 24, Lin et al. and Esteves et al. disclose the apparatus of claim 9 and the system of claim 23.

Lin et al. also disclose an apparatus/system wherein the controller is to open and close the first, second, third, and fourth switches (Fig. 4).

Regarding claims 13 and 26, Lin et al. and Esteves et al. disclose the apparatus of claim 9 and the system of claim 23.

Lin et al. also disclose an apparatus/system wherein, in the burst mode, the first, second, third, and fourth switches are turned off during a resting duration (see Fig. 4, where it is inherent that during a resting duration the switches must be turned off).

Regarding claim 14 and 27, Lin et al. and Esteves et al. disclose the apparatus of claim 8 and the system of claim 22.

Lin et al. also disclose an apparatus wherein the controller comprises:
an indicator pin to receive an indication of the brightness setting of the display (Fig. 4, and see col. 4, lines 58-61, where the feedback line to the inverter controller indicating the current lamp load is equivalent to an indicator pin on the controller).

6. Claims 3, 15-17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US 6,936,975) in view of Esteves et al. (US 6,724, 174) and further in view of Weindorf (US 2002/0118182).

Regarding claim 3, Lin et al. and Esteves et al. disclose the method of claim 2.

Lin et al. and Esteves et al. fail to teach that the threshold brightness level comprises 60 candela per meter squared.

Weindorf does teach a display where a threshold brightness level comprises 60 candela per meter squared (see para. 66, where 60 NITS is given as an upper level for nighttime display luminance).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Weindorf in the method taught by the combination of Lin et al. and Esteves et al. in order to have a threshold level set at an upper level of a nighttime luminance range, which in turn corresponds to a range of values for when low power is required.

Regarding claims 15-17 and 20, Lin et al., Esteves et al. and Weindorf disclose the method of claims 1-3, and 6-7.

Weindorf also discloses that a method for controlling a backlight can be implemented on a computer readable medium having stored thereon computer executable instructions (see para. 60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Weindorf in the method discussed in claims 1-3, and 6-7 above in order to have a software implementation of the method which is well-known in the art.

7. Claims 12 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US 6,936,975) in view of Esteves et al. (US 6,724, 174) and further in view of Yu (US 6,750,842).

Regarding claims 12 and 25, Lin et al. and Esteves et al. disclose the apparatus of claim 8 and the system of claim 22.

Lin et al. and Esteves et al. fail to explicitly teach that the first and fourth switches are switched in phase, the second and third switches are switched in phase, and the first and fourth switches are switched 180 degrees out of phase with the second and third switches.

Yu discloses a backlight control circuit for a full-bridge circuit first and fourth switches are switched in phase, the second and third switches are switched in phase, and the first and fourth switches are switched 180 degrees out of phase with the second and third switches (see Fig. 1 and Fig. 2, where VG1 and VG3 correspond to the first and fourth switches of the Lin circuit discussed above and are switched 180 degrees of VG2 and VG4 which correspond to the second and third switches of the Lin circuit).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention incorporate the teachings of Yu in the method taught by the combination of Lin et al. and Esteves et al. in order to achieve a standard and well-known continuous mode of operation in a full-bridge circuit (see Yu, col. 1, lines 31-51)

Allowable Subject Matter

8. Claims 4-5 and 18-19 are allowed.
9. The following is an examiner's statement of reasons for allowance:

Relative to independent claims 4 and 18, the major difference between the teaching of the prior art of record (Lin, Estevez) and the instant invention is that the said prior art does not teach that the threshold brightness level corresponds to an intersection of an efficiency curve of the voltage inverter in the continuous mode and an efficiency curve of the voltage inverter in the burst mode.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen G. Sherman whose telephone number is (571) 272-2941. The examiner can normally be reached on M-F, 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

1 June 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

